WR&A
WHITMAN, REQUARDT AND ASSOCIATES, LLP
10505 Judicial Drive, Suite 200
Fairfax, Virginia 22030
Phone: (703) 293-9717
Fax: (703) 273-6773

ATTACHMENT 9

MEMORANDUM

Date: January 5, 2006

Project: Warrenton-Fauquier Airport Special Exception
WR&A W.O.: 18221

Subject: Warrenton-Fauquier Airport Wastewater Facility WWTP Expansion Summary

I. PURPOSE AND BACKGROUND

The purpose of this memorandum is to summarize some of the key permitting issues associated with the expansion of the existing wastewater treatment plant at Warrenton Fauquier Airport. The treatment system is also expected to have a surface water discharge for disposal of treated effluent.

In addition to reviewing the permitting issues, WR&A has developed a preliminary estimate of probable construction cost based on manufacturer quotes, regulatory requirements and recent construction pricing for similar facilities. The preliminary budget estimate for the project is approximately $2.0 million. WR&A would like to seek County input at this stage prior to completing the Special Exception permit process to insure the budgetary numbers are acceptable.

This memo is intended to review the permitting process, the design guidelines, the manufacturer data and pricing used to develop the proposed treatment process.

II. PERMITTING

The primary permitting agencies which will be involved with the project are as follows:

- The State of Virginia Department of Environmental Quality (DEQ)
- Fauquier County Department of Community Development (County)
- Fauquier County Water and Sanitation Authority (WSA)

Each agency has various requirements related to the construction of a wastewater treatment facility.

A. Virginia DEQ

The State sets limits related to the effluent water quality and quantity. DEQ also sets general standards for the construction quality, and operation of wastewater facilities. Discussions with DEQ regarding the proposed surface water discharge from the Warrenton-Fauquier Airport Wastewater Treatment Plant facility indicate that the wastewater treatment plant will require an NPDES permit and sludge handling permit, but will not be required to comply with the new nutrient regulations related to the Chesapeake Bay if it is constructed to a size under 40,000 gpd.

The airport is at the western edge of the Occoquan Drainage Shed. The DEQ will not support any stream discharge to the Occoquan from this facility. We did identify one stream (Marsh Run) which flows to the southwest to the Rappahannock River. It will be possible to obtain a permit for the discharge at Marsh Run. DEQ advised that the following effluent parameters would be part of that allocation:

- BOD = 10 mg/l
- TSS = 10 mg/l
- TKN = 3 mg/l
- Flow <40,000 gallons per day.

DEQ will permit the discharge of nitrogen (TKN) so long as the daily volume is less than 40,000 gallons per day. DEQ no longer provides allocation for nutrients at 40,000 gallons per day and above. As a result, a facility of a larger size would be required to enter into the nutrient trading program which will not be developed until 2006.

Appendix A contains Virginia Department of Environmental Quality DEQ Forms;

- Form 2A, NPDES Application
- Instructions for completing Form 2A
- VPDES Sewage Sludge Permit Application Form

B. Fauquier County Department of Community Development (County)

The County requires a Land Development Application to process a Special Exception. The application includes a Special Exception Plat indicating the location and pertinent features of the area including; soils, elevations, property lines, public rights-of-way and proposed facilities including parking and ingress/egress. The application also includes a Statement of Justification outlining the proposed facility operations, traffic loads and the area to be served by the facility.

WR&A has received preliminary survey files from the Airport surveyor and preparation of a formal Special Exception Plat will follow this meeting and the endorsement of the plan as proposed.

Appendix B contains Fauquier County Special Exception Permit forms:

- Application Checklist
- Land Development Application
- Fee Calculation Sheet
- Posting Requirement
- Posting Affidavit
- Conflict of Interest Statement

C. Fauquier County Water and Sanitation Authority (FCWSA)

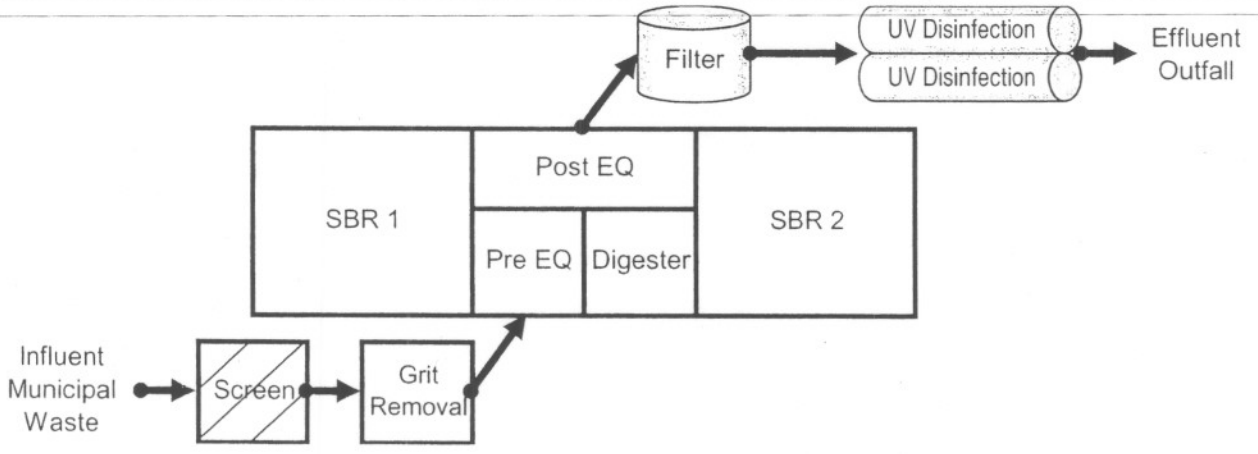
WR&A has discussed this project with the FCWSA. This agency advised that the plant expansion must be constructed in accordance with their *Community Wastewater System Standards*. These standards provide very specific requirements for acceptable treatment technologies and acceptable manufacturers. The intention of these standards is to provide the FCWSA with consistent treatment equipment in all of their facilities. A copy FCWSA's *Community Wastewater System Standards* is included as Appendix C. WR&A inquired about potential treatment options and has requested quotes related to an approvable treatment facility.

FCWSA's standards require a treatment process that follows the steps below and includes the specific equipment in each of these process stages:

1. Screen
2. Grit Removal
3. Sequencing Batch Reactor (SBR)
    a. Pre-Equalization Tank
    b. SBR Basin
    c. Post-Equalization Tank
    d. Digester
4. Effluent Filter
5. UV Disinfection

III. TREATMENT PROCESS SCOPE AND COST

The schematic outlines the main features of the treatment process. All major pieces of equipment required to meet FCWSA approval are included.



Plant Equipment (Summary of Data in Appendix D)

Screen

Manufacturer:	Lakeside Micro-Strainer Model 12MS-0.25-101
Representative:	Sherwood-Logan and Associates, Pat Foley
Phone:	410-841-6810
Items submitted:	Budgetary Pricing Sheet Technical Data Sheets Equipment descriptions and performance data Schematic Drawings
Description:	Equipment for screening, not including concrete work and site development.
Pricing:	$46,000 Screen

Grit Removal System

Manufacturer:	Aeroductor with Grit Classifer
Representative:	Sherwood-Logan and Associates, Pat Foley
Phone:	410-841-6810
Items submitted:	Budgetary Pricing Sheet Technical Data Sheets Equipment descriptions and performance data Schematic Drawings
Description:	Equipment for grit removal, not including concrete work and site development. 40,000 gpd design flow
Pricing:	$56,000 Grit Removal

Sequencing Batch Reactor (SBR)

Manufacturer:	Aqua-aerobics
Representative:	Crocker and Associates, Kevin Ritchie
Phone:	cell 804-928-8499
Items submitted:	Process Design Report Price Quote with equipment description Schematic Drawings
Description:	Two basin SBR with pre and post equalization, and digester. 40,000 gpd design flow.
Pricing:	$400,000 (updated phone quote 1-04-06)

Tanks for SBR

Manufacturer:	Dutchland, Inc.
Representative:	Crocker and Associates, Kevin Ritchie
Phone:	cell 804-928-8499
Items submitted:	Budgetary Proposal Price Quote with equipment description

Description:	Pre-cast tanks for SBR
Quote:	$227,000 (Additional $24,000 for Hand Rails on walkways)

Effluent Filter

Manufacturer:	Parkson Dynasand DSF-7
Representative:	Heyward, Mark Morgan
Phone:	cell 804-965-0086
Items submitted:	None, phone conversation only
	Web-Site Brochure
Description:	Post treatment filter
Quote:	$62,000 (phone quote)

UV Disinfection

Manufacturer:	Aquionics
Phone:	800.925.0440
Items submitted:	Price Quote
	Specifications
	Schematic Drawings
	Performance Charts
Description:	2-parallel 40,000 gpd units
Quote:	$19,500

Budgetary Estimate

The attached spreadsheet is a preliminary estimate for the construction of a 40,000 gallon per day facility that will meet DEQ and FCWSA requirements. The budget does not include survey, engineering, financing, inspections, or contract administration. These additional items generally add 20% to the project cost. Although the price quotes received from the manufacturers are in writing (with the exception of the effluent filter), all quotes note the final approved product may vary in price from the quoted product due to potential changes in design, raw material pricing or other factors.

WR&A CONSTRUCTION COST ESTIMATE

ACTIVITY AND LOCATION: Warrenton Airport	DISCIPLINE: All	W.O. NO.: 18221	
	ESTIMATED BY: DAG	DATE: 1/4/2006	
PROJECT TITLE: Wastewater Treatment Plant	CHECKED BY: RK	DATE:	
	COMPLETE:	STATUS OF DESIGN: Prelim	

SECTION	ITEM DESCRIPTION	UNIT	QUANTITY	MATERIALS		LABOR COST		EQUIPMENT COST		TOTAL BARE COST
				UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL	
Civil										
	Mobilization/Demobilization	LS	1	$50,000	$50,000					$50,000
	Sediment Erosion Control	LS	1	$1,500	$1,500	$450.00	$450	$1,250.00	$1,250	$3,200
	Outfall Piping	LF	2,300	$15.00	$34,500	$20.00	$46,000	$10.00	$23,000	$103,500
	Yard Piping, Site Prep. (5% of Mech.)	LS	1	$12,518	$12,518	$20,863	$20,863	$8,345	$8,345	$41,725
Mechanical										
	SBR (Aqua-Aerobics)	LS	1	$400,000	$400,000					$400,000
	Pre-Cast Tanks (Dutchland Inc.)	LS	1	$227,000	$227,000					$227,000
	Tank Hand Railings	LS	1	$24,000	$24,000					$24,000
	Headworks (Raptor Micro Screen)	LS	1	$46,000	$46,000					$46,000
	Grit Removal System (Lakeside)	LS	1	$56,000	$56,000					$56,000
	Dynasand Filter (Parkson)	LS	1	$62,000	$62,000					$62,000
	Disinfection UV (Aquionics)	LS	1	$19,500	$19,500					$19,500
	Installation (15%)						$125,175			$125,175
Structural/Architectural										
	Misc. Concrete Structures (5%)	LS	1	$12,518	$12,518	$20,863	$20,863	$8,345	$8,345	$41,725
	Outfall structure	LS	1	$3,000	$3,000	$2,000	$2,000			$5,000
Electrical incl. HVAC (10%)		LS	1		$93,302		$18,660			$111,962
	Sum before mark-ups				$1,041,837		$234,010		$40,940	$1,316,787
	Sales Tax, Labor, and Equipment Markups			30%	$312,551	30%	$70,203	24%	$9,662	$392,416
	Subtotal including Markups				**$1,354,388**		**$304,213**		**$50,602**	**$1,709,203**
	Contingency (20%)	LS	1		$208,367		$46,802		$8,188	$263,357
	Total Estimate With Contingency				$1,562,755		$351,016		$58,790	**$1,972,560**